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The State-level Burden of the Trade War: Interactions between the Market Facilitation Program and Tariffs

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THE COSTS and benefits of the trade war are unevenly distributed across the United States. Looking at the raw impact on commodity prices, such as soybeans, we know that it disproportionately affects farmers in the Midwest. The Phase One Trade agreement between the United States and China promises substantial relief; however, we question if the Phase One targets are realistic (See "The Phase One Trade Deal: Projections and Implications" by Chad Hart and Lee Schulz in this issue). Thus, it is important to consider just how much is at stake for different states and the nation as a whole.

Measuring the impacts of the tariffs on any particular group is challenging because there are a lot of moving parts. While the tariffs depress the price of US pork, the outbreak of African Swine Fever in China supports meat demand and prices on US markets.[1]

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Our job is to isolate the specific impacts of independent policy choices. We have, for example, already measured the impact of the tariffs on Iowa independent of other policies and unexpected events (like the outbreak of African Swine Fever in China).[2] However, there are some policies that, while they are independent choices, directly compensate particular groups adversely impacted by the tariffs. The Market Facilitation Program (MFP) is one such policy that compensates farmers across the United States for the adverse impacts of the tariffs on farm income.

Ongoing research measuring the state-level impacts of the tariffs in combination with cash transfers under the MFP find a dramatic alteration of the geographic distribution of the costs of the trade war. This is not particularly surprising, as the intent of the policy is to compensate farmers. What might be surprising is that many Midwest states, including Iowa, actually experience net welfare gains as MFP payments totally offset the impact of the tariffs. We carefully consider the full effects of the tariffs in terms of both commodity price impacts and tariff revenues

[1] See, for example, "Impact of African Swine Fever on US and World Commodity Markets" in the fall 2019 *Agricultural Policy Review*.

[2] In Balistreri et al. (2018) we consider the impact of the tariff increases on Iowa as of August 2018.

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collected, and we are careful to consider that MFP payments have to (at least implicitly) be funded through foregone budget opportunities, which indicates an escalation of the costs of the tariffs on states that receive little or no MFP payments, like California.

The Trump Administration implemented the Market Facilitation Program (MFP) in 2018 and 2019 to assist farmers impacted by the trade war. In total, the administration authorized $28 billion of aid to farmers hurt by the tariffs, and is expected to distribute about $23 billion of these $28 billion. This aid shifts the state-level burden of the trade war because the MFP payments have a real cost in terms of budget opportunities. Considering the state-level burden requires a consideration of the trade equilibrium, the distribution of tariff revenues, and the net distribution of assistance proceeds.

The administration has disbursed the 2018 payments, about $8.5 billion, and two tranches of 2019 payments.[3] The total estimated payments for 2019 (three tranches) is around $14.3 billion based on Glauber's (2019) estimates. While the 2018 payments were commodity based (and notoriously failed to compensate corn growers by offering $1.65/bushel for soybean growers and $.01/bushel for corn growers), the 2019 payments are based on acres, vary across counties, and, in general, offer higher per-acre payments than the 2018 MFP payments. Criteria used to compute losses from the trade retaliations were also more lax. Both the 2018 and 2019 MFP payments concentrate heavily on Midwest states, reflecting the political influence of these states' rural communities. Glauber (2019) provides a breakdown of MFP payments by state, which we use as the base of our analysis.

We use a general-equilibrium modeling system for the US economy that provides computationally efficient state-level resolution with consistent (funded) interstate transfers that allows us to explore the distribution of state-level burdens under plausible alternative assumptions. We construct a set of detailed social accounts for all 50 states and the District of Columbia using the open-source WiNDC system.[4] These data are dynamically aggregated to seven regions plus a focus state for calibrating the multi-region US model for analysis, which gives us 50 different models with small regional dimensionality (eight). We test for, and find, negligible approximation errors related to this computational strategy. Our scenarios include the introduction of international price impacts and consistent tariff revenues from a GTAPinGAMS global model and the introduction of the MFP interstate transfer payments.[5]

We make the most transparent assumption about the funding and distribution of MFP payments and the distribution of tariff payments. Specifically, we assume that tariff revenues are distributed lump-sum according to benchmark income shares across states; and, we assume that the MFP is funded lump-sum according to benchmark income shares. The transfers do not act through distortionary policy instruments. Our

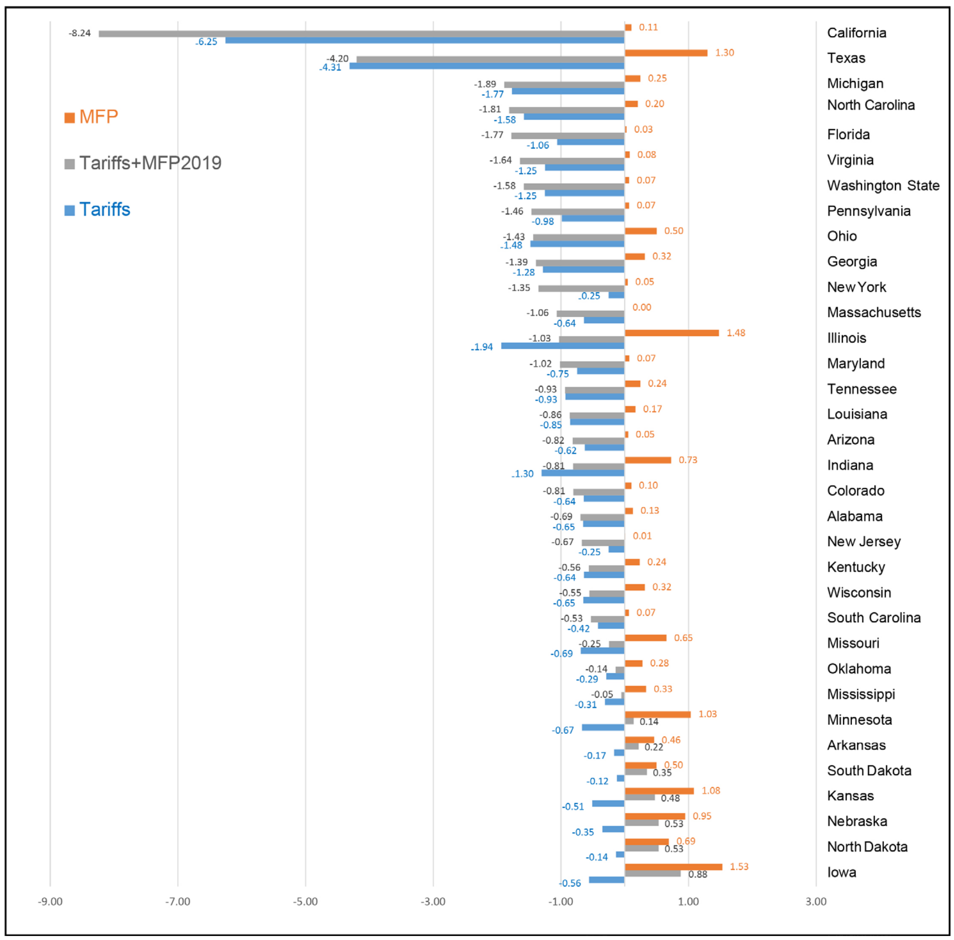

Figure 1. State-level trade war burden with and without 2019 MFP compensation ($B EV) and 2019 MPF payments ($B).

[3] A third tranche is supposed to take place in early 2020.
[4] The Wisconsin National Data Consortium (WiNDC) is led by Thomas F. Rutherford at the University of Wisconsin: https://windc.wisc.edu/.
[5] The GTAPinGAMS model used to establish international prices and tariff revenues is from Li, Balistreri, and Zhang (2019).

transparent cash transfer approach avoids the issue of how the MFP is actually funded (potentially through increases in distortionary taxes and government debt), which could substantially alter the distribution and overall cost of the MFP. Our approach gives us a first-pass consideration of the state-level burden-shifting aspects of the MFP independent of the other distributional consequences of government finance.

Table 1 and figure 1 show that many Midwest states experience net welfare gains, as MFP payments totally offset the incidence of tariff retaliation on the state economy. Specifically, Iowa gains $878 million, North Dakota $532 million, Nebraska $532 million, Kansas $475 million, South Dakota $347 million, Arkansas $216 million, and Minnesota gains $140 million. These “winner” states, in general, disproportionately rely on their agricultural sector for income, and received substantial MFP payments.

Other states, like Illinois, do not quite experience a full offsetting of the incidence of tariffs, but still greatly benefit from the MFP payments. Notably, Illinois has a net welfare loss of $1.029 billion, despite receiving the second-largest MFP payments ($1.476 billion) due to its large loss from the tariff war ($1.936 billion); however, the MFP payments still abate the loss by $900 million.

At the opposite end, Texas and California experience large welfare losses regardless of MFP payments. California’s welfare losses are substantially exacerbated by the MFP—a -$8.239 billion welfare impact under the 2019 MFP payments compared to -$6.255 billion under the trade dispute alone. California’s MFP payments are small ($106 million) compared to the size of its agriculture sector, and California’s large income share makes it bear a large burden in terms of funding the MFP. Thus, net MFP payments for California are -$1.931 billion, which substantially contributes to exacerbated welfare losses. The story in Texas is more nuanced—MFP payments are large ($1.297 billion), but as the second-largest state, Texas has a large burden in terms of funding the MFP. On net, Texas receives a relatively small transfer of $108 million. The MFP thus slightly mitigates the cost of the trade dispute for Texas—a -$4.200 billion welfare impact under the 2019 MFP payments compared to -$4.312 under the trade dispute alone. In percent terms, the District of Columbia, Hawaii, and Virginia face a similar situation as California—limited agriculture and MFP payments, but bearing their share of funding the MFP.

Table 1. Trade War Burden and MFP Impacts by State ($B)

State	Benchmark Private Consumption	Welfare Impacts: Tariff Scenario	Welfare Impacts: Tariff+MFP Scenario	MFP Payments	Net MFP Payments	Allocated Tariff Revenue
Alaska	34.1	-0.028	-0.076		-0.047	0.096
Alabama	149.7	-0.653	-0.691	0.127	-0.038	0.337
Arkansas	93.2	-0.166	0.216	0.459	0.372	0.178
Arizona	232.8	-0.625	-0.817	0.053	-0.186	0.489
California	1690.3	-6.255	-8.239	0.106	-1.931	4.160
Colorado	229.3	-0.643	-0.806	0.103	-0.158	0.533
Connecticut	175.0	-0.292	-0.499		-0.202	0.412
District of Columbia	44.7	-0.141	-0.261		-0.117	0.238
Delaware	41.4	-0.076	-0.109	0.022	-0.032	0.110
Florida	801.0	-1.058	-1.773	0.027	-0.695	1.474
Georgia	359.5	-1.280	-1.391	0.316	-0.107	0.865
Hawaii	62.3	-0.370	-0.469		-0.096	0.196
Iowa	110.3	-0.558	0.878	1.528	1.397	0.268
Idaho	57.4	-0.104	-0.093	0.063	0.011	0.106
Illinois	535.1	-1.936	-1.029	1.476	0.883	1.211
Indiana	226.4	-1.299	-0.810	0.726	0.474	0.514
Kansas	102.1	-0.508	0.475	1.082	0.958	0.254
Kentucky	141.9	-0.639	-0.563	0.235	0.073	0.331
Louisiana	152.7	-0.854	-0.862	0.169	-0.009	0.364
Massachusetts	358.3	-0.638	-1.064		-0.415	0.847
Maryland	262.9	-0.746	-1.015	0.070	-0.261	0.676
Maine	54.0	-0.012	-0.057	0.001	-0.044	0.093
Michigan	375.4	-1.765	-1.886	0.245	-0.119	0.744
Minnesota	252.4	-0.667	0.140	1.033	0.785	0.507
Missouri	218.9	-0.686	-0.246	0.653	0.428	0.459
Mississippi	85.6	-0.307	-0.052	0.333	0.248	0.174
Montana	40.8	-0.050	0.046	0.129	0.093	0.073
North Carolina	333.2	-1.576	-1.810	0.202	-0.227	0.877
North Dakota	33.5	-0.136	0.532	0.691	0.650	0.083
Nebraska	72.7	-0.351	0.532	0.946	0.859	0.177
New Hampshire	66.1	-0.148	-0.212		-0.062	0.126
New Jersey	437.6	-0.250	-0.672	0.009	-0.413	0.861
New Mexico	71.9	-0.201	-0.255	0.031	-0.052	0.170
Nevada	117.6	-0.377	-0.513	0.002	-0.131	0.271
New York	931.9	-0.254	-1.351	0.046	-1.069	2.278
Ohio	435.9	-1.476	-1.434	0.501	0.039	0.943
Oklahoma	124.6	-0.287	-0.142	0.277	0.140	0.279
Oregon	159.0	-0.361	-0.495	0.023	-0.131	0.315
Pennsylvania	517.0	-0.982	-1.460	0.067	-0.467	1.090
Rhode Island	43.8	-0.046	-0.094		-0.047	0.096
South Carolina	161.7	-0.420	-0.529	0.066	-0.106	0.352
South Dakota	35.7	-0.124	0.347	0.497	0.459	0.078
Tennessee	218.7	-0.929	-0.934	0.244	-0.005	0.508
Texas	1003.7	-4.312	-4.200	1.297	0.108	2.428
Utah	105.0	-0.352	-0.468	0.007	-0.113	0.245
Virginia	363.2	-1.246	-1.641	0.077	-0.382	0.937
Vermont	27.3	0.003	-0.019	0.002	-0.022	0.048
Washington	310.2	-1.251	-1.582	0.069	-0.321	0.796
Wisconsin	217.3	-0.647	-0.552	0.316	0.092	0.458
West Virginia	58.5	-0.021	-0.069	0.004	-0.047	0.105
Wyoming	22.6	-0.037	-0.057	0.008	-0.019	0.056
USA	**12756.4**	**-38.137**	**-38.129**	**14.338**	**0.000**	**29.280**

Our results also reveal important political economy insights, both across and within states. Because the MFP payments are strongly tied to agricultural production, farmers, ranchers, landowners, and rural communities receive the bulk of the benefits. At the same time, the burden of tax revenues falls on all citizens, and thus more populous urban states and urban constituents with more residents

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New Farm Bill, New Decisions, New Tools

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THE AGRICULTURE Improvement Act of 2018 (2018 Farm Bill) introduced major changes to the Agricultural Risk Coverage (ARC) and the Price Loss Coverage (PLC) programs, and Iowa State University Extension and Outreach has developed new tools to help farmers and landowners make informed decisions about these programs.

ARC/PLC

The 2018 Farm Bill re-authorized the ARC and PLC programs for 2019–2023. Farm operators still have to elect one program and enroll annually in ARC/PLC; however, Congress introduced several tweaks to add flexibility and improve the probability of receiving higher payments for producers affected by low commodity prices or crop failures.

ARC is offered at the county level (ARC-CO) and at the individual level (ARC-IC), and ARC program payments are triggered by actual revenue dipping below the revenue guarantee. ARC-CO uses historical county yields and national cash prices to determine the revenue guarantee. ARC-IC uses farm-specific historical yields across all farms enrolled in ARC-IC in the state operated by the same farmer and national cash prices to determine the revenue guarantee for that farmer. The revenue guaruntees in both programs amount to 86% of their respective five-year Olympic average revenue. While, at first, ARC-IC seems to be more relevant to managing risk at the farm level than does ARC-CO, the payment acres in the ARC-IC program are only 65% of the farm's total covered commodity base acres, while ARC-CO payment acres are 85% of the farm- and commodity-specific base acres. Furthermore, while ARC-CO is a commodity-specific program (in the sense that corn base acres in a farm can be enrolled in ARC-CO while soybean base acres on the same farm can be enrolled in PLC), ARC-IC averages out all sources of revenue across all covered commodities and all ARC-IC enrolled farms in the state to calculate the revenue guarantee and the actual revenue. From 2015 to 2018, about 98% of all corn and soybean base acres in Iowa were elected into ARC-CO. PLC payments are triggered when annual commodity prices fall below specific reference prices.

One of the major changes introduced by the 2018 Farm Bill is shortening the period in which a farm is tied to a particular program. Farmers can now switch programs for a particular farm before the end of the life of the farm bill. A farm can be elected into ARC or PLC for 2019 and 2020 before the March 15, 2020, deadline. However, starting in 2021, program election will be an annual choice.

Another major tweak is the one-time opportunity in 2020 for farmland owners (not tenants) to update farm PLC yields for payment years 2020–2023. As producers can now switch programs during the life of the farm bill, updating the PLC program yields before the September 30, 2020 deadline may prove beneficial later on. The choice to update yields is one that owners and operators should consider closely.

Minor changes introduced to program payment formulas that tend to increase the probability of occurrence and the amount of program payments if market conditions improve through time, include the use of higher "plug" yields, the use of trend-adjusted yield factors, and a reference price "escalator."

The calculation of the ARC-CO revenue guarantee involves the five-year Olympic average county yield. In the 2014 formula, any year when county yields were below 70% of the transitional yield, the latter would be used as a "plug" yield instead of the actual yield. In the 2018 formula, the new "plug" yield is equivalent to 80% of the transitional yield. Furthermore, the 2018 formula uses county-specific trend-adjusted yield factors (similar to the ones used in crop insurance) instead of observed county yields in the revenue guarantee calculation, potentially resulting in "inflated" guarantees for some counties.

The calculation of the ARC-CO revenue guarantee also involves the five-year Olympic average price for each commodity. The 2018 formula allows the use of the Effective Reference Price (ERP) as a price "plug" in years when the commodity price is lower than the ERP. In turn, the ERP is the highest of the 2014 Statutory Reference Price ($3.70 for corn and $8.40 for soybeans) and 85% of the five-year Olympic average price, up to 115% of the Statutory Reference Price ($4.26 for corn and $9.66 for soybeans). Starting in 2019, the ERP is effectively the new triggering price point for PLC payments. Although current price projections for 2020–2023 seem to suggest that ERP will equal the Statutory Reference Price over the life of the 2018 Farm Bill, the tweaking of the price formulas allows for a built-in reference price "escalator" mechanism for whenever prices shoot up.

The 2018 Farm Bill left the crop insurance program mostly unchanged,

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The Phase One Trade Deal: Projections and Implications

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THERE HAVE been a number of agricultural market movers (issues that change the direction and intensity of price moves) over the past year; however, most of these movers cancel each other out. Weather problems limited supplies and pushed prices higher, but the trade disputes and tariffs limited usage and offset the price impacts. With the passage of the USMCA and the signing of trade deals with China and Japan over the past few months, there is some positive news on the trade front. However, as the market reaction to the US-China trade deal signing indicates, agricultural markets are not interested in the political deals, but in actually seeing trade flows change due to these deals.

International trade has grown into a lucrative component for US agriculture. As figure 1 shows, the values of agricultural product exports and imports have more than doubled since 2000. While crop prices have dropped dramatically since 2012 and livestock prices have retreated from 2014, US agricultural export values have remained fairly firm, holding at \$130–\$140 billion over the past five years. While imports have also risen significantly over the past couple of decades, agriculture remains one of the few sectors in our economy where the United States holds a trade surplus. The recent trade disagreements have diminished that surplus, but overall trade values remain robust.

The progress on multiple trade deals signals the potential for significant shifts in agricultural trade. The USMCA and Japan agreements concentrate on solidifying existing trade flows, rather than significantly expanding trade opportunities. Canada, Mexico, and Japan have been major agricultural markets for the United States for quite some time. These new deals maintain and protect those relationships, with the prospects for continued, but limited, growth. The China deal, on the other hand, has the potential to radically change global trade flows. To see why, it is important to understand the current agricultural export picture.

Figure 2 breaks down US agricultural export values by market destination. The blue line is the value of agricultural exports to countries where the United States has a free trade agreement. Canada and Mexico represent roughly two-thirds of that volume. The red line is the value of agricultural exports to China. Prior to 2000, China was a very small market for US agriculture; however, trade between the United States and China grew significantly and quickly after, peaking at roughly \$25 billion in 2012. Between 2012 and 2017, US agricultural export values to China slowly declined, mainly due to the general reduction in agricultural prices. Trade disagreements between the United States and China and the imposition of tariffs led to the steep drop in export values in 2018. We did see, however, some recovery in agricultural trade flows to China even before the signing of the China trade deal. The green line is the value of agricultural exports to the rest of the world, and shows that we rely on significant trade flows outside of China and free trade partners. To put it another way, agricultural trade is more complicated than the "Big 3" markets of China, Canada, and Mexico.

The Phase One deal alters the

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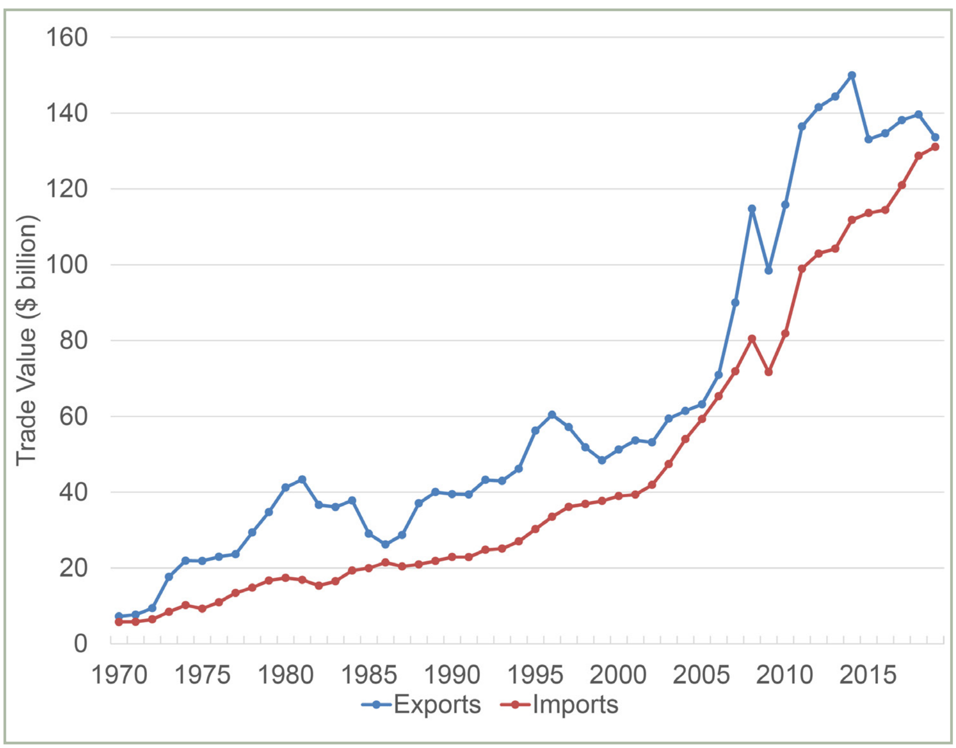

Figure 1. US agricultural trade flows, 1970–present.

Source: USDA-FAS.

Implications of a US Carbon Tax on Agricultural Markets and GHG Emissions from Land-use Change

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RISING CONCERNS about climate change have led to the introduction of carbon policies around the globe. In January 2019, the Energy Innovation and Carbon Dividend (EICD) Act of 2019 was introduced to the House of Representatives.[1] The act proposes a carbon tax of \$15/ton of carbon dioxide equivalent (t-1 CO2-e) starting in calendar year 2019, and covers entities such as refineries, coal mines, and natural gas producers. Adjusted for inflation, the tax increases \$10 each year and is subject to adjustments given the under- or over-achievement of annual emission reduction targets. The tax ceases if greenhouse gas (GHG) emissions are at or below 10% of the 2016 GHG emissions.

There are two important provisions of the carbon tax proposal to increase its support among stakeholders. First, the EICD Act of 2019 is designed as a revenue-neutral carbon tax with the creation of a Carbon Dividend Trust Fund. The tax revenue is distributed back to eligible individuals (i.e., US citizens and lawful residents) in the form of a lump-sum payment. Second, there is a carbon border fee adjustment mechanism to adjust the cost of imported fuels and carbon-intensive products covered under the legislation. The purpose of the border adjustment is to avoid carbon leakage by switching to carbon-intensive imports whose production is not subject to a carbon tax. Beyond the lump-sum payments and border adjustments, there are two tax exemptions specifically for agriculture. First, fuels and its derivatives are not taxable if used on-farm for farming purposes. For example, diesel fuel purchased for farm machinery is not subject to the tax. Second, there is no carbon tax on non-fossil fuel emissions from agriculture such as from livestock and fertilizer application—an important exemption because agriculture contributes 9% of total US GHG emissions (EPA 2019).

To assess the impacts of the carbon tax on agricultural producers in the United States and on international commodity markets, we use the CARD Model—a well-established global agricultural outlook model—to evaluate a baseline without a carbon tax and a scenario that includes a carbon tax.[2] We can attribute the difference between the baseline and our scenarios in terms of commodity prices, land-use, trade patterns, and GHG emissions to the various levels of the carbon tax. We adjust the cost of production of US agriculture, which we model through the different components of the Producer Price Index (PPI). An increase in the PPI from the carbon tax will affect crop and livestock producers. Adjustments in production quantities (i.e., crop area and livestock herd) allow us to assess the global effects of the carbon tax. We should note that we use a simulation model to evaluate a reasonable pathway as opposed to using historical data in an econometric model; thus, there is inherent uncertainty about the actual evolution of agricultural markets including land-use, prices, and emissions. We only analyze one aspect of the proposed legislation (i.e., agricultural cost of production and trade), and do not include other emission sources such as manufacturing or transportation.

Over the ten-year projection period, the carbon tax ranges from \$15 to \$105/t-1 CO2-e. We observe the highest increase in production cost at the end of the projection for corn, cotton, and sorghum with increases of 16.4%, 15.5%, and 14.6% above the baseline, respectively; and, the lowest increase in production costs are for wheat (12.5%) and soybeans (11.9%). Oats, rice, sugar beets, barley, and peanuts experience a cost of production increase in a relative narrow band between 13.2% and 13.9%. The magnitude of the cost increase is mostly due to increases in natural gas prices, which is an input in the production of fertilizer.

Although farmers face higher production cost, an increase in commodity prices and a decrease in crop area lessens the effect on crop profitability (i.e., market net return) (see figure 1). Corn, cotton, and sorghum prices increase between 1.0% and 1.6%, but the price increases for other commodities are below 1%. Although we see an increase in the cost of production by up to 16.4% for some commodities, the decreases in net return range from 3.2% (peanuts) to 8.1% (wheat). A crop area that is essentially unchanged from the baseline explains the high decrease in net returns for wheat. Thus, the increase in the production cost translates more directly into a net return decrease

[1] https://www.congress.gov/bill/116th-congress/house-bill/763

[2] Center for Agricultural and Rural Development (CARD) at Iowa State University

compared to other crops.

Under the act, overall crop area in the United States declines by 0.4%. Barley, oats, and sorghum decrease between 2.3% and 2.4%, whereas corn and soybeans decrease by 0.9% and 0.1%, respectively, in the same scenario. The carbon tax mostly impacts fertilizer and, thus, makes using marginal cropland unprofitable. US corn and sorghum exports decrease by 4.9% and 3.4%, respectively. The decrease in soybean exports is smaller than for corn at 0.8%. The largest change in US exports is observed for sunflower seeds with a decrease of 7.5%.

The decrease in US exports for major commodities is in part compensated by an increase in exports from large crop-producing countries. Argentina increases its exports of barley, corn, and sorghum by 0.2%, 1.3%, and 1.0%, respectively. As previously mentioned, we see a slight increase in US wheat production and a 0.5% decrease in wheat exports from Argentina. Brazil also increases its exports of corn and soybeans by 5.2% and 0.6%, respectively.

Dumortier et al. (2012) shows that a tax on US cattle emissions would increase net GHG emissions globally. Thus, the implementation of a carbon tax that affects agriculture in the United States warrants attention to avoid similar effects. Our results show that an increase in carbon emissions triggered by land-use change is negligible and represents less than 0.6% of US emissions in 2017 (EPA 2019). Emissions from land-use change in other countries, especially Brazil, partly offset the reduction in US emissions from land-use change. Focusing on emissions from changes in cropland and pasture (due to changes in livestock inventory), the maximum emissions in the EICD scenario are 35.37 Tg CO2-e. Using minimum and mean carbon coefficients, the emissions are 5.95 and 16.22 Tg CO2-e, respectively.

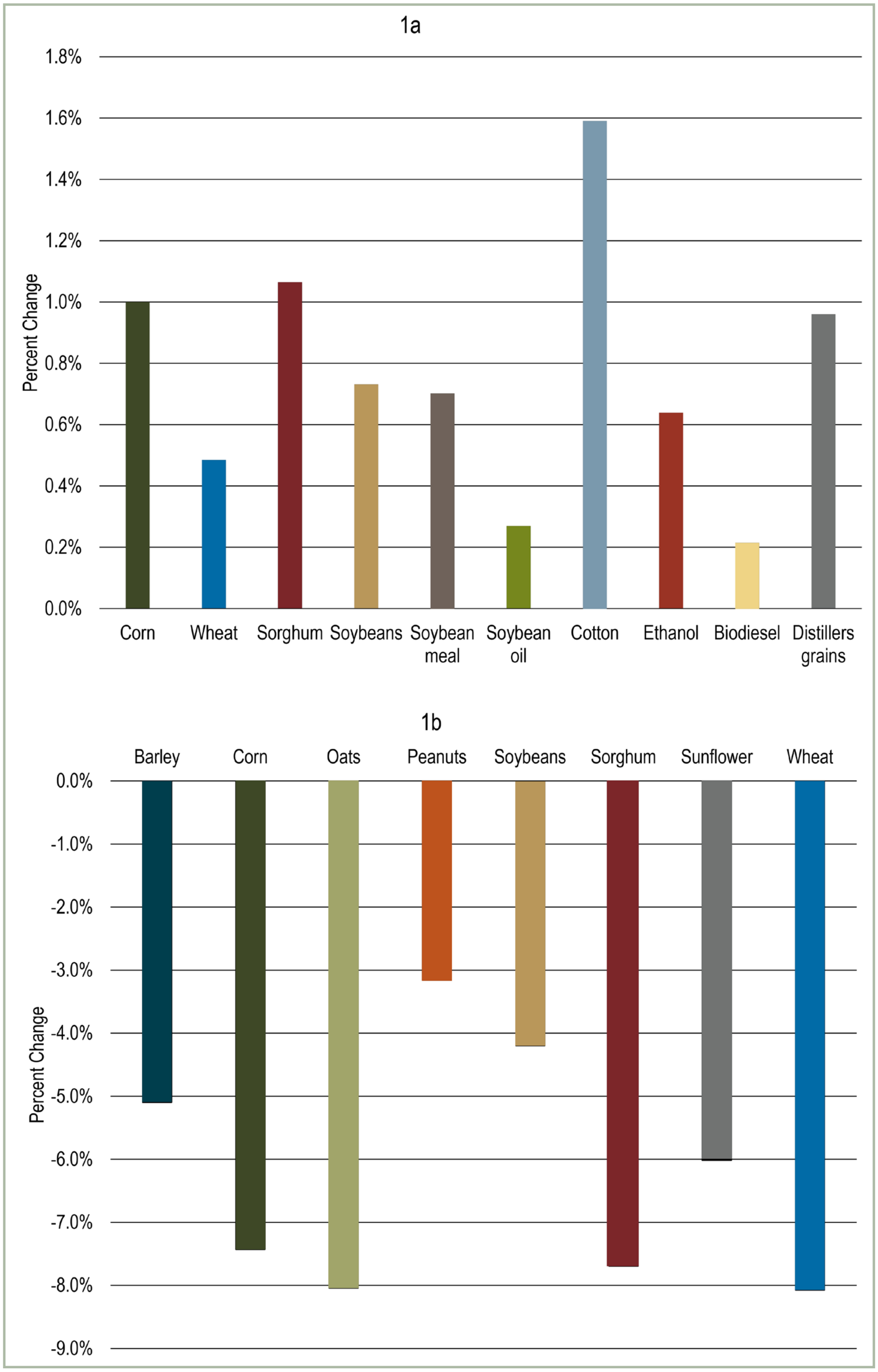

Figure 1. Commodity price changes (1a) and changes in net return (1b) under the EICD act.

Given the expected negative effects of climate change on US agriculture in terms of net revenue loss triggered by declining yields, the carbon tax may be a more cost-effective policy. This of course goes back to the discussion on the expected (and highly uncertain) damages associated with climate change and how those future expenditures compare to costs incurred today to avoid rising temperatures. The answer to that question is beyond the scope of our analysis.

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The Phase One Trade Deal: Projections and Implications

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agricultural trade landscape—China has agreed to specific targets for agricultural purchases for this year and next year. The deal uses 2017 as the base year for trade, and, as figures 2 and 3 show, Chinese agricultural purchases totaled roughly $19.5 billion that year. For 2020, China agreed to purchase $12.5 billion more in agricultural products than it did in the base year, which puts 2020 US agricultural exports to China at $32 billion (other publications report higher amounts, but they are including forestry and ag-related products, such as infant formula and pet food). For 2021, the agreement is $19.5 billion more than the base year—$39 billion in agricultural sales to China. These two targets alone guarantee a significant surge in sales to China, far eclipsing the record sales from 2012. The text of the deal also includes a statement indicating that the growth in US agricultural exports to China set in these two years is projected to continue through 2025. Figure 3 outlines those projections. If projections from the deal are accurate, agricultural trade with China will grow to exceed what the United States currently ships to its free trade partners or to the rest of the world.

Traders are sorting through three big questions right now. One, will China follow through on these commitments over the next two years and what mix of products will they choose? Two, how secure are those projections for continued agricultural trade growth beyond 2021? Three, what happens to our other markets as this agreement is fulfilled? We feel that it is likely that China will meet the value targets for the next two years as the African Swine Fever outbreak there has created a significant protein gap for China. The deal contains language easing trade rules for meats between the two countries, so it makes sense that China would expand meat purchases from the United States, fulfilling two objectives at once—filling in the protein gap and meeting trade targets. While soybeans were the largest portion of previous agricultural sales to China, we expect meat, especially pork, to take the leading spots in our future sales to China. Thus, the product mix will shift, moving to more value-added products,

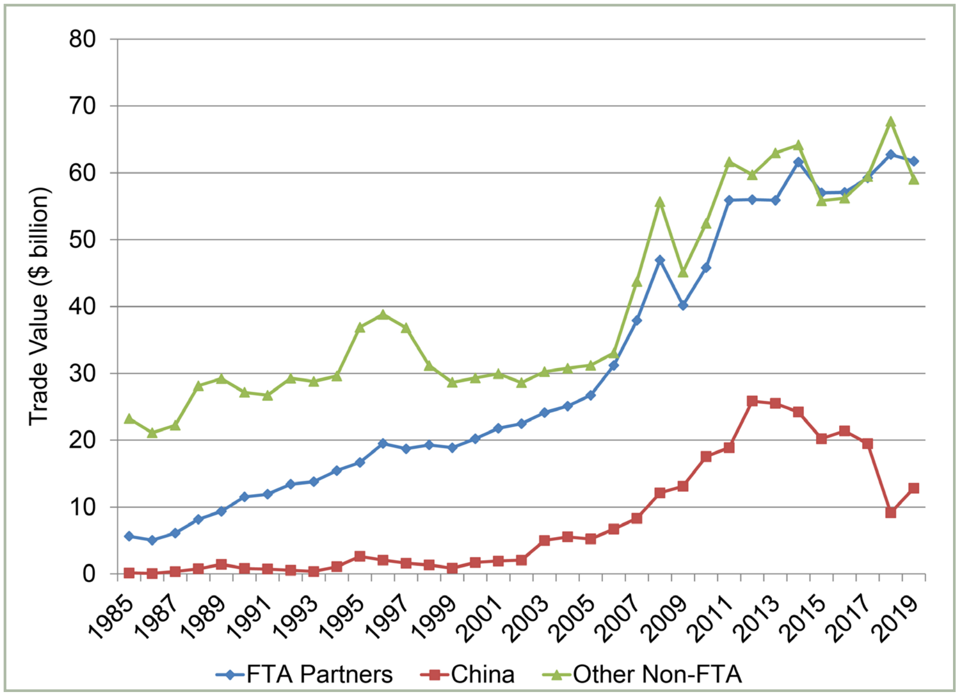

Figure 2. Export market segments.
Source: USDA-FAS.

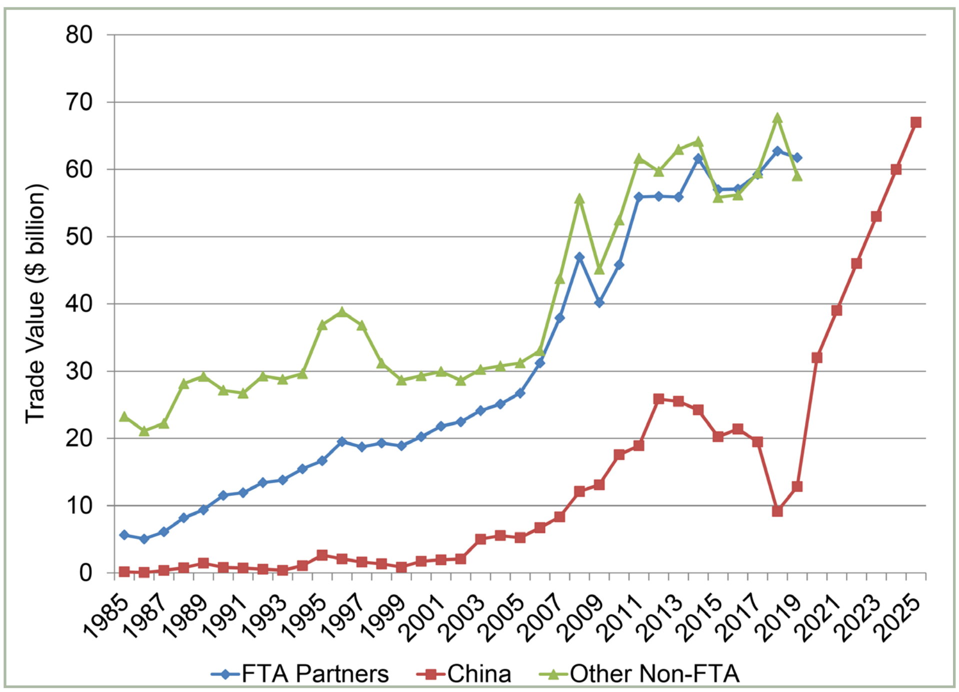

Figure 3. Projected export flows under the Phase One deal.

which helps China hit the dollar value targets.

Sales beyond 2021 are not locked in place. The agreement only states that both countries currently think the trade flows would continue to develop at the same pace as the first two years, implying gains of $7 billion per year. If the projections hold, they imply significant shifts in global trade flows—US agriculture will become even more reliant on Chinese demand. A large concern is what will happen to our other markets—this deal will likely crowd some of them out. China has agreed to buy more agricultural products, but that does not mean we can add that value to total exports. In fact, we are currently already seeing the potential for crowding out. Over the past few months China has re-established itself as the top market for US soybeans. As China has moved back in, however, numerous other markets have reduced US soybean imports. Sales to the European Union, Mexico, Japan, Indonesia, South Korea, and Canada have fallen. With trade, there can be significant slippage—gains in one area are often offset by losses elsewhere. In this case, forcing sales to China will likely cost us open sales to the rest of the world. ■

New Farm Bill, New Decisions, New Tools

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but explicitly allows the use of cover crops as a "good farming practice," and indicates that cover crop termination does not affect the insurability of a subsequently planted insurable crop when terminated according to USDA guidelines (or those of an agricultural expert).

New Decisions, New Tools

The ISU Extension and Outreach Farm Management Team has been educating farmers and landowners about the new decisions required by the 2018 Farm Bill using the following seven-step program, which is centered around two new decision tools:

1. Find your farm's base acres and existing PLC yields on the FSA 156-EZ form.

2. Evaluate whether to update the PLC program yield using 2013–2017 crop production evidence and Ag Decision Maker File A1-35 (http://bit.ly/ADMFileA135). The information required to use this tool is actual farm yields for 2013–2017 on a planted acre basis and the existing PLC yield. Form CCC-867 must be signed with USDA Farm Service Agency offices to complete the process by September 30, 2020. The update will become effective for the 2020 crop.

3. Guesstimate your county yields for both the 2019 and 2020 crops.

4. Project the national cash price averages for both the 2019/20 and 2020/21 marketing years.

5. Place this information into an ARC/PLC Payment Calculator. The ISU calculator (http://bit.ly/ARCPLCCalculator) includes links to USDA and FAPRI price projections and uses reported and projected prices from USDA Farm Service Agency and Risk Management Agency to project payments per base acre (after sequestration) for ARC-CO and PLC.

6. Compare the potential ARC-CO vs. PLC payments for both 2019 and 2020 crops by crop and FSA farm number.

7. Elect and enroll each farm for two years (2019 and 2020) in the ARC-CO and/or PLC program by crop by Farm Service Agency farm number at USDA Farm Service Agency offices by March 15, 2020.

A major drawback of most ARC/PLC calculators is that they lack the capabilities to evaluate the potential payments from ARC-IC. The reason behind the omission is the wealth of farm-specific information required to implement the calculations, especially when farmers operate multiple FSA farms. ARC-IC should definitely be considered by farmers who experienced prevented planting in 2019, and those at risk of experiencing it in 2020 (such as farmers in Northwest Iowa), because the program considers the resulting revenue on those acres equal to zero, and the payment will equal the whole ARC-IC revenue guarantee, up to a cap, if prevented planting was declared in the entire farm. The University of Illinois has recently released the 2019 ARC-IC Payment Calculator, which can be accessed at https://farmdoc.illinois.edu/fast-tools/arc-co-plc-model, along with an explanatory video available at http://bit.ly/ARCICVideo.

Information on past ARC-CO and PLC payments by counties in Iowa is available in the CARD website at http://bit.ly/ARCPLCbyCounty. More information about the 2018 Farm Bill is available at http://bit.ly/ExtensionFarmBill. ■

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bear higher costs of raising these tax revenues. It is also interesting to note that while most of the "winner" states are red states that voted for President Trump in the 2016 election, the net welfare effect for key battleground "purple" states such as Michigan, Ohio, Wisconsin, and Pennsylvania remain negative.

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Also Available from CARD

ISU Land Value Survey Results

CARD economist Wendong Zhang conducts the annual Iowa State University Land Value Survey every November. The 2019 results show the statewide value of an acre of farmland is now estimated to be $7,432, which represents an increase of 2.3 percent, or $168, since 2018. The $7,432 per acre estimate, and 2.3 percent increase in value, represents a statewide average of low-, medium-, and high-quality farmland. As Zhang noted, the increase just barely outpaced inflation. A press release is available at bit.ly/LVSPR.

Farm Owners Make Small Increases in Conservation

Alejandro Plastina and Wendong Zhang were recently involved in a study that shows Iowa farmers have made small increases in the adoption of conservation practices since 2012, and that ongoing trends in land ownership and management are likely barriers to a number of conservation practices. A press release is available at bit.ly/IFTOS106.

Media Contacts

Every year, CARD economists are contacted hundreds of times by the media for their insights on current economic issues. You can see what they had to say, and how their research is being utilized, at bit.ly/AllContacts.

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